EDWARD W. EIDT

IBLA 84-728 Decided November 8, 1985

Appeal from a decision of the Wyoming State Office, Bureau of Land Management, rejecting noncompetitive oil and gas lease offer. W-85509.

Affirmed.

1. Oil and Gas Leases: Applications: Generally--Oil and Gas Leases: Known Geologic Structure--Oil and Gas Leases: Noncompetitive Leases

   Lands within a known geologic structure of a producing oil or gas field may be leased only by competitive bidding. A noncompetitive oil and gas lease offer must be rejected where the lands are determined to be within a known geologic structure after the simultaneous oil and gas lease drawing, but before the lease is issued.

2. Evidence: Burden of Proof--Oil and Gas Leases: Applications: Generally--Oil and Gas Leases: Known Geologic Structure--Oil and Gas Leases: Noncompetitive Leases

   A noncompetitive oil and gas lease applicant who challenges the determination that land is within a known geologic structure bears the burden of proving by a preponderance of the evidence that the determination is erroneous.

APPEARANCES: Del Draper, Esq., Salt Lake City, Utah, for appellant; Lowell L. Madsen, Department Counsel, Denver, Colorado, for the Bureau of Land Management.

OPINION BY ADMINISTRATIVE JUDGE HARRIS

Edward W. Eidt was the first-drawn applicant for parcel WY-198 in the May 1983 simultaneous oil and gas lease filing. WY-198 initially covered sec. 4: lot 1, SE 1/4 NE 1/4 and sec. 7: lots 1 and 2, E 1/2 NW 1/4, T. 39 N., R. 74 W., sixth principal meridian, Converse County, Wyoming. By decision of August 8, 1983, BLM withdrew from that parcel, lot 1, SE 1/4 NE 1/4 of sec. 4 because they were determined to be within a known geologic structure (KGS), effective April 27, 1983. In that decision, BLM instructed Eidt to submit a lease offer for the remaining land in parcel WY-198, but advised him that all lease offers are subject to determination as to whether

any of the lands are within a KGS of a producing oil or gas field. BLM received appellant's lease offer W-85509 on August 29, 1983. On June 8, 1984, BLM rejected Eidt's lease offer for the remaining lands because the land had been determined to be within the Ross Field undefined KGS, effective December 20, 1983. 1/

Eidt argues that BLM should have accepted his lease offer immediately, rather than submitting an additional request that the lands be "clearlisted." This policy was "arbitrary and capricious, as evidenced by multiple clearlisting requests, unnecessary delay, and the failure to routinely issue the lease after receipt of the lease offer on August 22, 1983," according to Eidt.

[1] Section 17(b) of the Mineral Leasing Act, as amended, provides that if the lands to be leased "are within any known geologic structure of a producing oil or gas field, they shall be leased to the highest responsible qualified bidder by competitive bidding." 30 U.S.C. § 226(b) (1982). If land in a noncompetitive lease offer is designated as within a KGS, at any time prior to issuance of the lease, the noncompetitive lease offer must be rejected as to the KGS lands. 43 CFR 3112.5-2(b). Prior to accepting the lease offer, the authorized officer is required to determine the status of the lands in the lease offer. The Department has no authority to issue a noncompetitive lease for such lands as are classified as within a KGS. McDonald v. Clark, 771 F.2d 460, 464 (10th Cir. 1985); McDade v. Morton, 353 F. Supp. 1006 (D.D.C. 1973), aff'd, 494 F.2d 1156 (D.C. Cir. 1974); Floyd L. Huenergarde, 88 IBLA 48 (1985); Evelyn D. Ruckstuhl, 85 IBLA 69 (1985); Joseph A. Talladira, 83 IBLA 256 (1984). Therefore, it was proper for BLM to determine whether the lands were within a KGS prior to accepting Eidt's lease offer.

Eidt also argues that BLM erred in including the lands embraced by lease W-85509 within the boundaries of the Ross Field undefined KGS.

[2] The oil and gas lease applicant who challenges a KGS determination has the burden of proving by a preponderance of the evidence that the determination is in error. Bender v. Clark, 744 F.2d 1424 (10th Cir. 1984). The Secretary of the Interior has delegated the duty to determine the boundaries of a KGS to his technical experts in the field and he is entitled to rely upon their reasoned opinions. Thomas Connell, 82 IBLA 132 (1984).

A KGS is "technically the trap in which an accumulation of oil or gas has been discovered by drilling and determined to be productive, the limits of which include all acreage that is presumptively productive." 43 CFR 3100.0-5(1). KGS boundaries are defined for administrative purposes. The KGS determination represents BLM's conclusion that, on the basis of geologic evidence, there is a reasonable probability that a reservoir of a producing oil and gas field is within the boundaries of the KGS. Evelyn D. Ruckstuhl, supra.

1/ The June 8, 1984, decision stated that the land was within a KGS effective Jan. 20, 1983; however, the date was corrected in a June 18, 1984 decision.

The geologic report accompanying the contested KGS determination states that the KGS is based on a zero foot isopach 2/ of the First Bench of the First Frontier Sandstone. According to the report all 40-acre tracts transected by the zero foot isopach were included within the KGS addition, as were all lands in the Powell Pressure Maintenance Unit, effective September 1, 1983. It states:

> The First Bench of the First Frontier Sandstone is interpreted as being reworked nearshore marine deposits. Reworking and winnowing of sediments in the upper First Frontier Sand, created a porous and permeable sand zone ranging from .5 to 6.5 feet in thickness. This thin reservoir contains excellent porosity and permeability and is almost entirely saturated with hydrocarbons. The trapping of the hydrocarbons is stratigraphic as the porous sands are bounded above and below by shale and grade laterally into tight sands and shales.

The report stated BLM relied upon well logs, Individual Well Reports, completion reports, an engineering report to the Powell Pressure Maintenance Unit, and the Ross undefined petroleum information cards to define the KGS boundaries.

In an attempt to prove that his lease offer was not within the KGS, Eidt submitted a geologic report prepared by two petroleum geologists, Norman Bodily and Ronald Lowery, (the Bodily-Lowery report) which concluded that the western boundary of the KGS was at least one-half mile to the east of the land in Eidt's lease offer. The report includes two isopach maps and a stratigraphic crossection of six key wells all prepared by Bodily and Lowery and a third isopach map prepared by Woods Petroleum Corporation.

As we stated above, the Ross Field undefined KGS is based on the zero-foot isopach of the First Bench of the First Frontier Sandstone as determined by BLM. Eidt's Exhibit A Isopach Map, (Exhibit A) is based upon BLM's data with respect to the sandstone thickness for each well, but also incorporates data from two additional wells. The Bodily-Lowery report states:

> These [additional] wells, in Section 32, T40N, R74W (4 feet) and Section 21, T39N, R74W (2 feet) have a definite effect on the contouring of the sand body. The 4 feet of sandstone in sectin [sic] 32, T40N, R 74 W, with the 4 feet in Section 5, T39N, R74W, and 4 feet in section 16, T39N, R74W establish a 4 foot isopach which defines the westward directional trend of the sand body. By projecting a normal isopach spacing, in conjunction with the control from the other wells; the sand body can be isopached as shown on Exhibit A. This interpretation moves the zero foot isopach about one half mile to the east in the vicinity of Section 7,

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2/ An "isopach" is defined as a "line, on a map, drawn through points of equal thickness of a designated unit." A Dictionary of Mining, Mineral, and Related Terms 593 (Bureau of Mines, Department of the Interior 1968). An "isopach map" is a map "indicating, usually by contour lines, the varying thickness of a designated stratigraphic unit." Id.

> T39N., R74W. Since the zero foot isopach is based on zero feet net sandstone in wells in section 30, T40N, R74W and Section 22, T39N, R74 W; the isopaching as shown on Exhibit A honors all control points.

The second isopach map prepared by Bodily and Lowery, Exhibit B Isopach Map (Exhibit B), places the zero-foot isopach contour approximately one mile to the east of the zero-foot isopach represented by BLM. Exhibit B is based upon the Bodily-Lowery geologic interpretation of the First Bench Sandstone thickness. The Bodily-Lowery Report concludes that BLM properly measured the sandstone thickness of three key wells but that the sandstone thickness of three other key wells was thinner than represented by BLM. To support their conclusions, the geologists have submitted a stratigraphic cross-section A-B, Exhibit C, which charts the gamma ray 3/ and bulk density 4/ of the six wells which are located near the western edge of the KGS. The Bodily-Lowery report states:

> The log from the well in Section 31, T40N, R74W show about 2 feet of sandstone as indicated by the bulk density, 12,431 to 12,433; however the top of the Gamma Ray indicates the top of the First Frontier is at 12,432, so that only 1 foot of sandstone is indicated 12,422 [12,432?] to 12,433. The upper foot 12,431-12,432 is opposite a shale as shown on the Gamma Ray log trace. Also shown on the caliper trace, is a definite hole washout which ends at about 12,432 1/2 feet. Since the density is effected by hole irregularity the thickness of porosity indicated by the bulk density is in question and thus in this well is reduced from 2 feet to 1 foot of effective sandstone thickness. A similar example is found in the well in Section 16, T39N, R74W. The bulk density indicates 4 feet of sandstone porosity 12,342-12346 feet, the First Frontier top, as shown by Gamma Ray is at 12,344 1/2, and a hole washout, as shown on caliper extends to 12,344. From this it appears there is about 1 1/2 feet of sandstone, and not the indicated 4 feet.
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> The well in section 21, T39N, R74W also is questionable with probable sandstone porosity of 1 foot from 12,400 to 12,401 and not the 2 feet as shown on Exhibit A. These changes in thickness have been incorporated into the Isopach Map Exhibit B. On

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3/ "Gamma-ray well logging" is defined as: "A method of logging boreholes by observing the natural radio activity of the rocks through which the hole passes. It was developed for logging holes which cannot be logged electrically because they are cased." A Dictionary of Mining, Mineral, and Related Terms 477 (Bureau of Mines, Department of the Interior 1968). "Shales, marine clay, and potash are generally more radioactive than sandstones, limestones, coal, and salt. Marine bands are generally, but not invariably, characterized by high gamma-ray counts." Definition of gamma-ray logging. Id.

4/ "Bulk Density" is the "weight of an object or material divided by its material volume less the volume of its open pores." A Dictionary of Mining, Mineral and Related Terms, 149 (Bureau of Mines, Department of the Interior 1968).

> Exhibit B the zero foot isopach is moved further east in the area of NW 1/4 Section 7, T39N, R74W. This is almost a mile east of the zero isopach as shown on the original Ross Undefined KGS Map.

Finally, appellant submits a copy of the Woods Petroleum Corporation Powell Field Isopach Map prepared in June of 1984. He represents that the map indicates the generally recognized boundaries of the Powell Pressure Maintenance Unit. This map shows that the relevant zero foot isopach passes diagonally across sec. 8, even further east of the lease offer land than represented by Eidt's Exhibits A and B. Therefore, according to Eidt, the Woods Petroleum Isopach Map corroborates the Bodily-Lowery determination that the KGS boundary is east of sec. 7.

BLM, in its May 24, 1985, Answer, states:

> The Bodily-Lowery report contends that a net sand thickness of 1-1/2 feet should have been attributed to the interval in the Southland Royalty No. 1-16 well instead of 4 feet as indicated on the BLM isopach map. This argument is based on the fact that a washout has occurred near the top of the First Frontier interval and this has caused an invalid reading on the bulk density curve.
>
> The BLM agrees that the density curve is affected by hole irregularity and that Messrs. Bodily and Lowery may have a valid argument, however, the BLM states it attributed a net pay thickness of 4 feet to the Southland Royalty No. 1-16 well because the bulk density curve read approximately 2 feet high relative to the gamma-ray curve. This is apparent on the bulk density log from 12,510-12,530 feet where washouts on the caliper log and peaks on the gamma-ray curve do not correspond with peaks on the bulk density curve. * * * In addition, the bulk density curve above the First Frontier interval from 12,334-12,338 feet is reading a normal value of 2.62 grams/cc. for the Carlile Shale.
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> As to the Anadarko No. 1 Fox-Fed. well, Bodily and Lowery contend that 1 foot of net sand should have been attributed to this well instead of 2 feet as indicated on the BLM isopach map. The BLM states it interpreted the top of the Frontier to occur at a depth of 12,432 feet and attributed 2 feet of net sand to the interval from 12,432-12,434 feet. The density curve appears to be reading approximately 2 feet high relative to the gamma-ray curve in this well too, which supports the proposition that the First Bench of the First Frontier Sandstone contains more than 2 feet of the net sand.

(Reference to exhibits omitted; Answer at 1-3).

BLM argues that while the information from the TXO Production No. 1 Hardy Ranch well (one of the additional wells relied on by the Bodily-Lowery Report), and the Woods Petroleum Isopach Map are helpful in interpreting the western limits of the Powell Field Reservoir, the information does not refute its KGS determination.

In the record before us, four isopach maps were prepared by at least three groups of geological experts and in no two instances were the subject zero-foot isopach contours, reflecting the western boundary of the geologic structure, positioned identically. Appellant's evidence shows the zero-foot isopach contour somewhere east of the lands in question. BLM's interpretation shows that contour crossing those lands. Appellant has established that geological experts may disagree on principally the same geologic information; he has not shown by a preponderance of the evidence that BLM's KGS determination was erroneous.

Accordingly, pursuant to the authority delegated to the Board of Land Appeals by the Secretary of the Interior, 43 CFR 4.1, the decision appealed from is affirmed.

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Bruce R. Harris
Administrative Judge

We concur:

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James L. Burski
Administrative Judge

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Frank D. Arness
Administrative Judge